7. K- Nearest Neighbors (KNN): classify the Iris dataset into different flower species

```
#Import necessary libraries

from sklearn.datasets import load_iris
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import classification_report, accuracy_score

#Load the Iris dataset
iris = load_iris()
X = iris.data  #Features
y = iris.target  # Labels

# Split dataset into training and testing sets (80% train, 20% test)
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)

#standardize the features (important for KNN)
scaler = StandardScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)

#Create the KNN classifier (you can change n_neighbors as needed)
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```
knn = KNeighborsClassifier(n_neighbors=3)

#Train the model
knn.fit(X_train, y_train)

#Make predictions
y_pred = knn.predict(X_test)

#Evaluate the model
print("Accuracy:", accuracy_score(y_test, y_pred))
print("\n classification Report:")
print(classification_report(y_test, y_pred, target_names=iris.
target_names))
```

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Accuracy: 1.0

Classification Report:

	precision	recall	f1-score	support
setosa	1.00	1.00	1.00	10
versicolor	1.00	1.00	1.00	9
virginica	1.00	1.00	1.00	11
accuracy			1.00	30
macro avg	1.00	1.00	1.00	30
weighted avg	1.00	1.00	1.00	30